

A NEW SPECIES OF SPHAERODORIDAE  
(ANNELIDA: POLYCHAETA) FROM  
SOUTHERN CALIFORNIA

Jerry D. Kudenov

*Abstract.*—*Sphaerodoropsis sexantennella*, new species, is described from Southern California. It is most closely related to both *S. oculata* Fauchald and *S. pycnos* Fauchald in having 10–11 rows of dorsal macrotubercles arrayed in a zig-zag pattern, and may differ from these and all other known congeners in having characteristic retractable accessory papillae on inferior lateral prostomial antennae.

Fauchald (1974:257–289) reviewed sphaerodorid polychaetes from world areas, redefined genera, and in all, recognized nine genera on the basis of characters that generally had not been applied in systematically consistent ways previously. In contrast, Pettibone (1982) recognized only four genera. This apparent discrepancy reflects the fact that Pettibone relied on traditional characters, which are fewer in number than those used by Fauchald (1974), to define sphaerodorid genera. However, Pettibone's scheme may result in polytypic genera, and at least one genus (*Ephesiopsis* Hartman and Fauchald) is excluded from her overview of the family. Fauchald's system has been used almost exclusively by most workers since 1974. It is used in the present study in an attempt to maintain monotypic definitions of genera and to facilitate species comparisons. This seems particularly appropriate since Perkins (1987) moved the genus *Levidorum* to a new family, Levidoridae, and Kudenov (1987) described the new genus, *Amacrodorum*, that is strongly isolated morphologically in lacking macrotubercles. Differences between Fauchald's (1974, 1977) and Pettibone's (1982) schemes need to be more thoroughly addressed

The present material derives from the ongoing California Phase II Monitoring Program (CAMP) of the Minerals Management

Service (MMS) as part of their Outer Continental Shelf Environmental Studies Program, and represents part of Science Applications International Corporation's (SAIC) overall effort to produce a taxonomic atlas of the macroinvertebrate fauna of the Santa Maria Basin and the western Santa Barbara Channel.

Type materials are deposited in the National Museum of Natural History, Smithsonian Institution (USNM); both types and non-types in the Natural History Museum of Los Angeles County (LACM).

*Sphaerodoropsis sexantennella*,  
new species  
Figs. 1–2

*Sphaerodoropsis* species A. Kudenov, 1992:  
4–379, fig. 4. 122A–K.

*Material examined.*—MMS CAMP Phase II, Sta. PJ-1, rep. 2, 34°55.79'N, 120°49.91'W, 145 m, 5 specimens (LACM-AHF POLY); Sta. PJ-1, rep. 3, same, 3 (LACM-AHF POLY); Sta. PJ-7, rep. 1, 34°55.79'N, 120°48.60'W, 123 m, holotype (USNM 157606), 7 paratypes (LACM-AHF POLY 1626; USNM 157607); Sta. PJ-7, rep. 2, same, 3 paratypes (LACM-AHF POLY 1627); Sta. PJ-8, rep. 1, 34°56.87'N, 120°49.91'W, 142 m, 3 (LACM-AHF

POLY); Sta. PJ-8, rep. 2, same, 3 (LACM-AHF POLY); Sta. PJ-8, rep. 4, same, 2 (LACM-AHF POLY); Sta. PJ-9, rep. 1 34°55.79'N, 120°51.23'W, 169 m, 3 (LACM-AHF POLY); Sta. PJ-9, rep. 2, same, 1 (LACM-AHF POLY); Sta. PJ-9, rep. 3, same, 1 (LACM-AHF POLY); Sta. PJ-10, rep. 1, 34°53.63'N, 120°49.91'W, 147 m, 2 (LACM-AHF POLY); Sta. PJ-10, rep. 3, same, 3 (LACM-AHF POLY); Sta. PJ-11, rep. 2, 34°57.95'N, 120°49.91'W, 136 m, 2 (LACM-AHF POLY); Sta. PJ-11, rep. 3, same, 1 (LACM-AHF POLY).

*Description.*—Holotype measuring about 1 mm long, 0.2 mm wide excluding setae, with 14 setigerous segments. Specimens having 12–14 setigerous segments ovigerous. Prostomium with a short globular median antenna plus two pairs of short digitate to globular lateral antennae (Fig. 1A–E). Superior lateral antennae smaller, shorter than inferior lateral antennae. Superior lateral antennae apparently lacking accessory papillae; inferior lateral antennae each with two retractable accessory papillae on median basal surfaces (Fig. 1D, E). These nipple-shaped, surrounded by a cirlet of six cirriform appendages (Fig. 1E). Two pairs of additional accessory papillae on body wall near midline, between superior and inferior lateral antennae (Figs. 1E, 2A, B). Pair large medial eyes present, deeply embedded in body wall, on a line behind median antenna at level of setiger 1 (Fig. 1D). Peristomial cirri short, papilliform (Fig. 1B–D).

Parapodia each with broad, bluntly conical acicular and erect digitiform presetal lobes; postsetal lobes absent (Fig. 1F, G). Parapodial papillae numbering three, including one each on anterior parapodial surfaces after setiger 2, and one each on proximal superior and inferior edges of all parapodia (Fig. 1G); papillae otherwise absent from anterior surfaces of first 1–2 setigers (Fig. 1F). Ventral cirri large, digitiform, not projecting beyond tip of acicular lobes (Fig. 1F, G).

Macrotubercles arrayed in ten or eleven

rows, forming a zig-zag pattern on dorsum, sessile, lacking terminal papillae. Papillae short, blunt, present dorsally between rows of macrotubercles; present ventrally in six staggered rows (Fig. 1H).

Setae entirely composite, of one kind, generally numbering six per fascicle (Fig. 1F, I–K); shafts inflated, sometimes with an indistinct subdistal spur (Fig. 1I), forming terminal sockets for long, falcate blades; blades with indistinctly serrated cutting margins and sharp recurved tips (Fig. 1K), varying up to two times longer than the shortest blade in setiger 1 (Fig. 1C), becoming nearly equal in length within a fascicle thereafter.

Anus terminal, with pair of dorsal anal papillae and longer midventral anal cirrus (Fig. 1L, M).

*Remarks.*—*Sphaerodoropsis sexantennella* is unusual in having characteristic and retractable accessory papillae on both the inferior lateral antennae and on the body wall between the inferior and superior lateral antennae (Fig. 2; note that Fig. 2A is a composite illustration of USNM 157606–157607). Such a feature has apparently not been noted previously in the genus *Sphaerodoropsis*, and strongly isolates *S. sexantennella* from other described species in this taxon. However, this trait is difficult to observe in *S. sexantennella* since, 1) all specimens tend to be about 1 mm long, 2) the general size of all prostomial structures is strongly reduced when compared to other known species of *Sphaerodoropsis*, 3) the prostomium is strongly retracted in all specimens except the holotype and one paratype (both illustrated), and 4) accessory papillae were detected only in the holotype. This species would have been described as lacking accessory papillae, had they not been protracted in the holotype; both their total number and distribution are here considered to be tentative pending the acquisition of additional specimens (Fig. 2B). It is suggested that the types of other sphaerodorid taxa be examined for the presence of re-



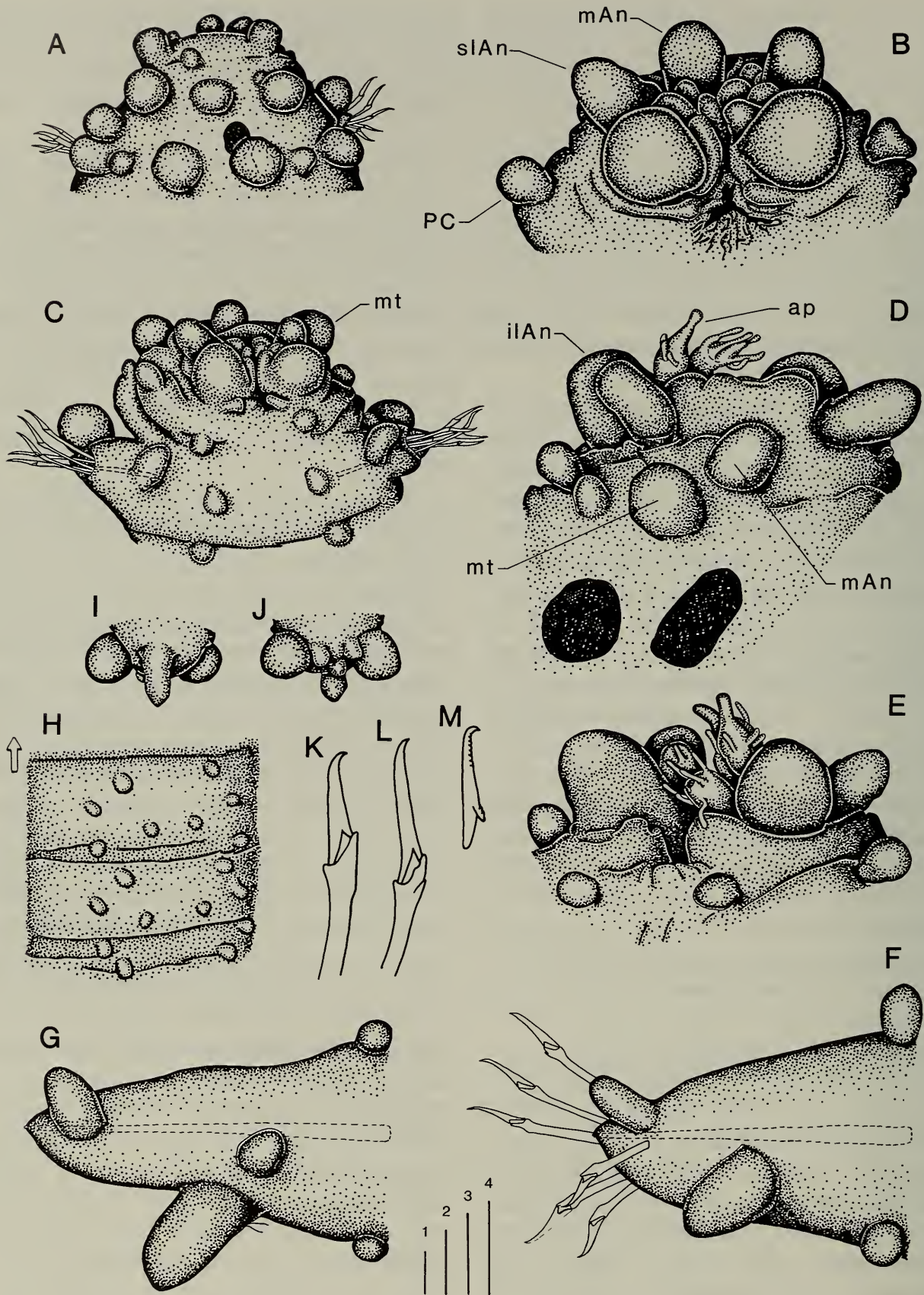


Fig. 1. *Sphaerodoropsis sexantennella*, new species: A–C, paratype (USNM 157607); D–N, holotype (USNM 157606). A, Anterior end and setiger 1, dorsal view; B, Anterior end, ventral view; C, Anterior end and setiger 1, ventral view; D, Anterior end, dorsal view; E, Anterior end, ventral view; F, Right setiger 2, anterior view; G, Right setiger 8, anterior view; H, Ventrum, setigers 4–6, ventral view, arrow points anteriorly; I, Pygidium, dorsal view; J, Pygidium, ventral view; K–L, Composite falcigers; M, Serrated blade of composite seta, oblique

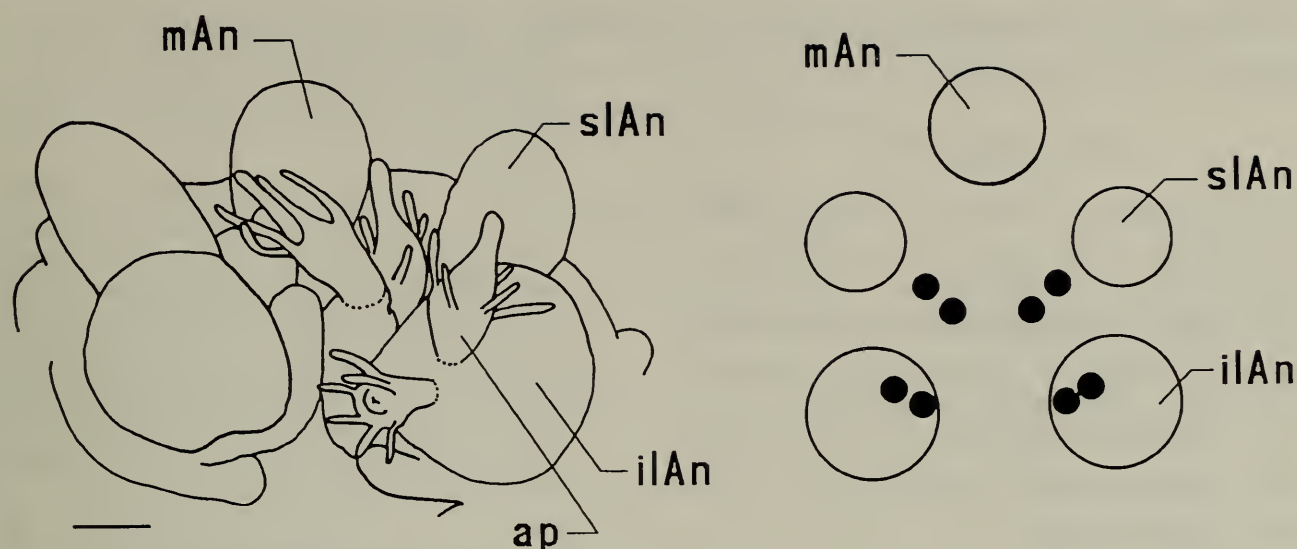


Fig. 2. *Sphaerodoropsis sexantennella*, new species: A–B, paratype (USNM 157607) and holotype (USNM 157606). A, Composite of anterior end showing spatial relationships between left accessory papillae, inferior lateral antennae and body wall, ventral view. B, Schematic showing distribution of accessory papillae (solid circles) on the body wall and inferior lateral antennae in relation to the median antenna and superior lateral antennae. Abbreviations given in legend of Fig. 1. Scale = .05 mm: A.

tractable accessory papillae on and around the prostomial antennae.

*Sphaerodoropsis sexantennella* is most closely related to *S. oculata* Fauchald, 1974, and *S. pycnos* Fauchald, 1974, both of which were described originally from Antarctica. *Sphaerodoropsis sexantennella* and *S. oculata* have ten or eleven rows while *S. pycnos* has eleven rows of dorsal macrotubercles arrayed in a zig-zag pattern. The first two species have well-developed eyes, and generally similar parapodia, although all parapodial structures of *S. sexantennella* are much more stout than those of *S. oculata*; *S. pycnos* lacks eyes, and has foliaceous rather than digitiform presetal lobes. *Sphaerodoropsis sexantennella* differs from *S. oculata* in having short prostomial antennae rather than long ones; papilliform peristomial cirri instead of digitiform structures; parapodial papillae on anterior, not posterior parapodial surfaces; blades of compos-

ite setae that are both longer and serrated; and ventral papillae arrayed in 6 orderly rows that do not cover the ventrum; and may differ in having 3 pairs of retractable accessory papillae only on inferior lateral prostomial antennae instead of having non-retractable papillae on all prostomial antennae (Fauchald 1974:fig. 19).

*Etymology.* — The epithet, *sexantennella*, derives from the following Latin terms, including the prefix *sex-*, meaning six or six-fold; *antenn*, the root for the New Latin term *antenna* or feeler, and the suffix *-ell* added to the noun stem to form a diminutive. It refers to the small cirriform appendages present on each of the nipple-shaped accessory papillae on inferior lateral antennae, and on the body wall between the superior and inferior lateral antennae.

*Type locality.* — CAMP Phase II Sta. PJ-7, 34°55.79'N, 120°48.60'W.

←  
view. Abbreviations: ap, accessory papilla; ilAn, inferior lateral antenna; mAn, median antenna; mt, macrotubercle; PC, peristomial cirrus; slAn, superior lateral antenna. Scale 1 = 0.01 mm: A, B, D–G; Scale 2 = 0.05 mm: C, H; Scale 3 = 0.05 mm: I, J; Scale 4 = 0.01 mm: K–M.



*Distribution.*—Southern California, in depths of 123–169 m.

#### Acknowledgments

I am indebted to James A. Blake, SAIC, for making these materials available for study, and for reviewing the manuscript, which was also improved by comments from two anonymous reviewers. This study is based on work funded by MMS Contract No. 14-35-0001-30484 to Science Applications International Corporation, Woods Hole, Massachusetts.

#### Literature Cited

- Fauchald, K. 1974. Sphaerodoridae (Polychaeta: Errantia) from world-wide areas. — *Journal of Natural History*, London 8:257–289.
- . 1977. The Polychaete worms. Definitions and keys to Orders, Families and Genera. — Los Angeles County Museum of Natural History, Science Series 28:1–190.
- Kudenov, J. 1987. Four species of Sphaerodoridae (Annelida: Polychaeta) including one new genus and three new species from Alaska. — *Proceedings of the Biological Society of Washington* 100(4):917–926.
- . 1992. Family Sphaerodoridae Malmgren 1867. Pp. 371–383 in J. A. Blake, ed., *Taxonomic atlas of the benthic fauna of the Santa Maria Basin and Western Santa Barbara Channel*. Vol. 4. Annelida Part 1. U.S. Department of the Interior, Minerals Management Service.
- Perkins, T. H. 1987. Levidoridae (Polychaeta), new family, with remarks on two new species of *Levidorum* from Florida. — *Bulletin of the Biological Society of Washington* 7:162–168.
- Pettibone, M. 1982. Polychaeta. Pp. 3–43 in S. P. Parker, ed., *Synopsis and classification of living organisms*. Vol. 2. McGraw-Hill.

Department of Biological Sciences, University of Alaska Anchorage, 3211 Providence Drive, Anchorage, Alaska 99508, U.S.A.